RECEIVED
CENTRAL FAX CENTER
SEP 29 2010

US Patent & Trademark Office
P.O. Box 1450
Alexandria
VA 22313-1450

Marc Geach
104 West Grand Avenue
Escondido CA
92025 USA

26th September 2010

Dear Sir/Madam,

RE: United States Patent Application No. 10/524493

The examiner raises the patent of Asami (6,265,450) against the claims contained within 10/524493. Asami describes the use of astaxanthin in an anti-stress composition designed for humans. Asami is limited to the use of astaxanthin for humans, and does not describe the enrichment of crustacean, insect or fish feeds. Therefore the claims contained within 10/524493 are new. Moreover, the claims in 10/524493 relate to the transdermal enrichment of live and frozen feeds with astaxanthin before ingestion by the target species rather than the ingestion of the astaxanthin directly (i.e. in aqueous or capsule form as described by Asami).

The examiner is claiming that the vitamin E in the solution described by Asami et al would emulsify the astaxanthin and therefore the solution described within 10/524493 are similar. Vitamin E is added to the solution described in 10/524493. However, it's role in the solution is only as a vitamin source for the target species and not as an emulsifier. If vitamin E was added in the level required to emulsify the astaxanthin it would be toxic to the target species, as several require relatively low doses of vitamin

E. The solution described in 10/524493 does not use vitamin E as an emulsifier as Asami does and is therefore different.

Morcover, an astaxanthin emulsion achieved using vitamin E would result in a crude emulsion whereas the emulsion described in 10/524493 is consists of uniform sub-micron sized micelles. The purpose of the emulsion described in 10/524493 is to enrich live and/or frozen feeds consisting of crustacean, insect or fish. In order to achieve this a narrow bandwidth (i.e. uniform particle size) is required. For transdermal enrichment to occur the emulsion must be a nano-emulsion consisting of sub-micron sized (approximately 600 nm) micelle, which facilitate the transit of the astaxanthin across the dermal membrane. To produce a solution of this nature, specialist high-shear force processing such as micro-fluidisation is required. The solution described in 10/524493 is the result of specialist manufacturing and consists of sub-micron sized micelle, rather than a generic emulsion resulting from the addition of vitamin E. Therefore the solution described within 10/524493 and Asami are quite different, and this claim is new.

In addition, the enrichment of the feedstuff, which is achieved transdermally, would be unlikely if a solution of vitamin E, astaxanthin and water (described by Asami) were used. One of the major factors in the rate of transdermal absorption is the osmolality of the astaxanthin containing solution. The solution described by Asami et al would be of low osmolality and therefore unlikely to result in significant enrichment of foodstuff, unlike the solution described in 10/524493. Therefore the claim is new.

Given the clear differences in the target audience and preparation of the astaxanthin solutions between Asami and 10/524493, I feel that the claims are justified.

Yours sincerely,

Marc Geach, MRCVS